Molecular Biology

CHARACTERIZATION OF THE METAL DEPENDENCE OF ACTINOMYCES NAESLUNDII

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Actinomyces naeslundii is a bacterium that colonizes the oral cavity and has been implicated in a number of oral diseases. Among other nutrients, bacteria need metal ions to grow. Therefore, we hypothesized that *Actinomyces naeslundii* may require zinc, iron, manganese and magnesium for proper continuous growth. In our study, we found significant growth of *A. naeslundii* in semi-defined media supplemented with a final concentration of 5 mM of manganese and magnesium, whereas semi-defined media with zinc and iron had modest to no effect on the bacterial growth. Current studies examining the growth of *Actinomyces naeslundii* in Actinomyces Defined Media (ADM) are underway. In addition, we identified the Actinomyces Metal Dependent Repressor (AmdR) gene that may be responsible for regulating metal ion uptake in these bacteria. To examine the role of *amdR* gene in *A. naeslundii* we inserted the kanamycin resistance gene (*KmR)* into the *amdR* open reading frame making a construct containing the interrupted *amd R* gene. Then, we inserted this construct into the bacterial genome via homologous recombination. A putative AmdR defective strain of *Actinomyces naeslundii* was identified and is currently under investigation.